

herewith Appendix A which is a "marked-up" copy of amended claim 2. A "clean" copy of the amended claim is provided as Appendix B. Support for the amendment may be found at page 8, lines 6-16 and elsewhere in the specification and claims. No new matter has been added within the meaning of 35 U.S.C. §132.

**REMARKS**

Claims 2-18 are currently pending in the present application. Claim 2 is an independent claim drawn to a process for preparing a wax composition from crude sugar cane wax with claims 3-16 depending therefrom. Claim 18 is an independent claim drawn to a food grade wax composition with claim 17 depending therefrom.

In the Final Official Action, the Examiner sustained previous rejections of all pending claims under 35 U.S.C. §103(a). With regard to claims 2-16, the Final Official Action states:

Applicant argues that the references do not teach deresination, browning effects from Maillard reaction, removal of phosphates, etc. However, in response it is noted that these features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Ven Geuns*, 988 F.2d 1181, 26 USPQ.2d 1057 (Fed Cir. 1993). Furthermore, applicant is reminded that in a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). As currently recited the method claims do not include any limitation stating a particular benefit

resulting from the particular steps. Thus the claims are interpreted as steps for any purpose, regardless of the intended purpose.

As cited in the office action of January 14, 2002, the primary reference, Wilder '807, teaches the recited method steps (i.e. heating crude wax in iso-propanol to remove pitch from the wax) except for the step of repeating the separation steps and removing any residual peroxides from the wax after treatment with the oxygen gas. However, these are convention steps known in the prior art for accomplishing the same goal as Wilder '807. With respect to repeating the steps, the purpose of Wilder '807 is to purify sugar cane wax, and the other reference, such as Arai et al., Junichi et al., Linden, teach repeating the separation steps for purifying sugar cane wax. Fuege who teaches a similar purification method applied to a natural wax, includes repeating the separation steps, and further teaches the conventional need to remove peroxides after an oxidizing step. Thus it is obvious to combine the references since they are trying to accomplish the same goal as Wilder: extracting a purified wax from a crude wax.

Applicant has amended claim 2 to include properties of the novel wax produced by the claimed process. Accordingly, the process of claim 2 is directed toward preparing a food grade wax composition having properties including a color in a range of pale yellow to colorless, a hardness comparable to Carnuba wax, and being free of color precursors responsible for browning via Maillard reaction, wherein said wax composition is prepared from crude sugar cane wax. None of the cited references attempt to accomplish the same goal as the present invention as defined by amended claim 2.

Further, the Examiner is referred to Applicant's argument

submitted with the Response filed to the Official Action designated paper 10.

As pointed out in that Response, the U.S. Supreme Court in Graham v. John Deere Co., 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under 35 U.S.C. 103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and (4) inquiring as to any objective evidence of non-obviousness.

Further, applicant respectfully traverses the rejection because all three prongs for a *prima facie* case of obviousness have not been established for each of the rejections. Specifically, all the claim limitations are not present in the cited references and one of ordinary skill in the art would have no motivation to modify the cited references into the present invention.

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all the claim limitations. In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); Amgen, Inc. v. Chugai Pharm. Co., 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); In re Wilson, 165 USPQ 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to

produce the present invention. See Ex parte Clapp, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

The process described and claimed in the present application is a combination of physical and reaction steps which removes impurities, such as color and polar lipids, providing a wax with low, and most importantly, stable color and narrower composition with a higher alcohol content, providing a sharper melting point and hardness. The benefit of the wax produced now is defined in amended claim 2.

The novelty of the claimed inventive process is the level of impurities and stability of the wax. In this wax, as defined in amended claim 2, the stability has been addressed by inducing the reactions like oxidation, Maillard reaction and polar lipid formation and subsequently removing the products and intermediate products which can induce further reaction. Immediate color, odor and taste are removed by fractionation, stripping and adsorption. The combination of these steps produces a unique wax product, which has not been prepared by previous processes suggested by the Examiner either individually or in combination.

**Summary of Differences between  
the Claimed Inventive Process and the Cited References**

Wilder et al. produces a final product of hardwax, which has been oxidized and has less odor. However since the Wilder et al. process has not removed intermediate peroxide, the product wax will continue to react. Furthermore, since sugars, amino acids and phosphates are not removed, these will remain as impurities and precursors for color and pitch formation.

Junuichi et al. produces a hardwax but, rather than solvent fractionation, the process uses saponification to convert the fatty acids into insoluble soaps. The final hardwax is unrefined and will still change again because of the presence of impurities suggested above and the presence of unsaturation.

Linden et al. produces a solvent fractionated hardwax. It would be similar to the processes of deresination implied by Wilder et al. used in producing hardwax. This hardwax will still contain the same impurities and precursors as contained in the Junuichi et al. hardwax.

Fuege et al. uses a solvent fractionation followed by chemical bleaching. As suggested by Wilder et al. the chemically bleaching may address the presence of unsaturation but it does not address the presence of the precursors. The use of chemical bleaching, which is a stronger oxidation reagent, will change the molecular

structure of the wax. As such, the final product will be unlike that of the claimed inventive process.

Cheng et al. uses inert gas to strip volatile components such as fatty acids and peroxide products to remove odor and color. Fatty acids in this process are not solvent fractionated as in the sugar cane wax. The peroxides are products produced with storage and/or exposure to oxygen. These are impurities, which are already present in the oil. The application of inert gas to strip impurities already present in the wax will have a temporary refining effect. Sugar cane wax contains chemical components, which will oxidize and form odor and taste. As such, the application of Cheng et al. process will not have the same effect as the claimed inventive process. The claimed inventive process induced the oxidation of the wax component and then removal of the intermediate products by gas stripping. Note that oxidation is avoided in the edible refining of oil. As such, oxidation gas stripping as used in the claimed inventive process is not used in the oil refining process.

Hilfman uses hydrogenation, which was not used in the claimed inventive process. The hydrogenation of the wax in the presence of inert gas at temperatures between 250° to 500°C, will certainly not produce the wax in the claimed inventive process.

As such, the wax produced has similar composition to some of

the waxes referred to by the Examiner. However the stability and level of purification achieved is different to what has been achieved or addressed by previous processes in sugar cane wax.

Applicant respectfully submits that amended claim 2 is not obvious over the prior cited against the claim as there is no teaching or motivation to combine the references in an attempt to achieve the inventive subject matter of claim 2. In particular, the prior art fails to teach or render obvious the method and wax produced therefrom as claimed in amended claim 2. Therefore the remaining claims are not obvious because the remaining claims contain the limitations set forth in claim 2 and the prior art fails to teach those limitations.

Accordingly, Applicant respectfully submits that claimed inventive subject matter is not obvious over the cited references and respectfully requests reconsideration and withdrawal of the rejection of claims 2-16 as being obvious thereover.

**The present inventive composition**

In the Final Official Action, the Examiner sustained previous rejections of all pending claims under 35 U.S.C. §103(a). With regard to claims 17-18, the Final Official Action states:

With respect to the arguments directed to claims 17 and 18, any compositions that comprises these components meets the limitation of these claims. Applicant is reminded, "[E]ven though product-by-process claims are

limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." (In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (Citations omitted)).

Applicant is aware that patentability of product-by-process claims is based on the product itself. Applicant's previous response illustrated that the product from product-by-process claim is different from the product listed in the prior art cited by the Examiner.

To reiterate, Claim 18 is drawn to a food grade wax composition, the composition comprising on a weight basis: wax esters, 6.2-11%; aldehydes, 2.8-9.5%; tri-glycerides, 0-3%; alcohols, 1.8-44.5%; and free fatty acids, sterols and polar lipids, 36.8-87.2%. Claim 17 depends from claim 1 and is drawn to a comestible which includes the food grade wax composition of claim 18.

**The prior art cited against the claimed inventive composition**

In contrast, Synosky et al. (H1241) disclose a universal gum base concentrate which contains about 15-25 weight percent synthetic elastomer, about 40-70 weight percent synthetic elastomer



plasticizer including a terpene resin, about 10-25 weight percent wax, about 1-12 weight percent softener and about 0-3 weight percent filler. Minor quantities of antioxidants and other ingredients may also be present.

Further, the Examiner asserts the secondary reference, Miguel-Columbel et al. (U.S. Patent No. 5,882,657), teaches the conventionality of using sugar cane wax in a food grade wax composition.

The Examiner also relies on Lake (U.S. Patent No. 5,882,657) as evidence of the conventional crude sugar wax composition of fatty acids, alcohols, esters and aldehydes.

**The differences between the claimed inventive composition  
and the cited prior art**

The differences between applicant's inventive subject matter and the cited references are readily apparent from their independent and distinct disclosures and claims. It appears that the rejection is predicated on the Examiner ignoring the fact that the wax composition of the present inventive subject matter of claim 18 is a unique entity, i.e., it is a composition comprising the components recited in the claim and is not part of the more complex compositions taught by Synosky et al. The present inventive subject matter thus provides a composition that can be

per se obtained from sugar cane wax and does not have to be constituted from individual components.

The foregoing notwithstanding, the Synosky et al. and secondary references are silent with respect to sterols, one of the components of the composition of the present inventive subject matter of claim 18 (the composition comprises 36.8-87.2% free fatty acids, sterols, and polar lipids). Thus, even when Lake or Miguel-Columbel et al. are combined with Synosky et al. the sterol component is still not taught. Thus, the combination of the references would still be lacking an essential component of the claimed inventive subject matter.

Further, as the Examiner correctly points out, Synosky et al. is silent in teaching 2.8-9.5% aldehydes. Even assuming Synosky et al. teaches the use of sugars as sweetener and reducing sugars are aldehydes, Synosky et al. does not teach the presence of aldehydes in 2.8-9.5% by weight of the composition. Neither do the secondary references of Lake or Miguel-Columbel et al. teach the presence of aldehydes in 2.8-9.5% by weight of the composition. Again, the combination of the references would still be lacking an essential component of the claimed inventive subject matter. In sustaining the rejection of claims 17-18, the Examiner discusses that the patentability of product-by-process claims are determined by the patentability of the product. Applicant has shown that the claimed

product is not taught by the cited references (presence of aldehydes in 2.8-9.5% by weight of the composition).

Accordingly, Applicant respectfully submits that claimed inventive subject matter is not obvious over the cited references and respectfully requests reconsideration and withdrawal of the rejection of claims 17 and 18 as being obvious thereover.

**CONCLUSION**

In view of the foregoing, applicant respectfully requests the Examiner to reconsider and withdraw the rejection of the claims and to allow all of the claims pending in this application.

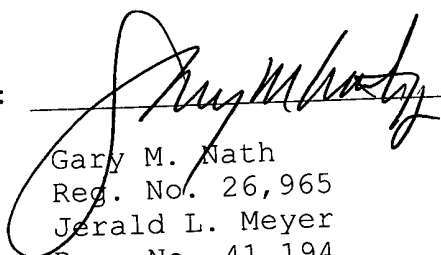
If the Examiner has any questions or wishes to discuss this matter, the Examiner is welcomed to telephone the undersigned attorney.

Respectfully submitted,

**NATH & ASSOCIATES PLLC**

Date March 10, 2003

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BOX RCE

Attorney Docket No. 23999

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Marjorie Gan VALIX

Serial No.: 09/402,362

Group Art Unit: 1761

Date Filed: October 4, 1999

Examiner: R. Madsen

For: **FOOD GRADE WAX AND PROCESS FOR PREPARING THE SAME**

**APPENDIX A - "MARKED-UP" COPY OF CLAIM AMENDMENTS**

Please amend claim 2 as indicated below. Applicant submits herewith the following "marked-up" copy of amended claim 2 under 37 C.F.R. § 1.121(c)(ii). No new matter has been added within the meaning of 35 U.S.C. §132.

2. (Twice Amended) A process for preparing a food grade wax composition having properties including a color in a range of pale yellow to colorless, a hardness comparable to Carnuba wax, and being free of color precursors responsible for browning via Maillard reaction, wherein said wax composition is prepared from crude sugar cane wax [, the] and said process comprising the steps of:

i) heating a solution of the crude wax with a lower alcohol as solvent at the boiling point of the solvent;

ii) allowing phase separation of the solution from (i) and decanting the upper phase while hot;

iii) allowing the separated upper phase from (ii) to cool and separating crystallised wax from the solvent;

iv) repeating steps (i) to (iii) using the wax from (iii) until all pitch has been removed from the wax;

v) heating the wax to between 90 and 140°C and oxidising molten wax with oxidising material; and

vi) continuing the heating under an inert gas on completion of the oxidation step until intermediate peroxide products are removed.



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Date Filed: October 4, 1999

Examiner: R. Madsen

For: **FOOD GRADE WAX AND PROCESS FOR PREPARING THE SAME**

APPENDIX B - "CLEAN" COPY OF CLAIM AMENDMENTS

Please amend claim 2 as indicated below. Applicant submits herewith the following "clean" copy of amended claim 2 under 37 C.F.R. § 1.121(c)(iii). No new matter has been added within the meaning of 35 U.S.C. §132.

e/ 2. (Twice Amended) A process for preparing a food grade wax composition having properties including a color in a range of pale yellow to colorless, a hardness comparable to Carnuba wax, and being free of color precursors responsible for browning via Maillard reaction, wherein said wax composition is prepared from crude sugar cane wax and said process comprising the steps of:

i) heating a solution of the crude wax with a lower alcohol as solvent at the boiling point of the solvent;

ii) allowing phase separation of the solution from (i) and decanting the upper phase while hot;

iii) allowing the separated upper phase from (ii) to cool and separating crystallised wax from the solvent;

iv) repeating steps (i) to (iii) using the wax from (iii) until all pitch has been removed from the wax;

v) heating the wax to between 90 and 140°C and oxidising molten wax with oxidising material; and

vi) continuing the heating under an inert gas on completion of the oxidation step until intermediate peroxide products are removed.